Sommerfeld At. Model

Under High Resolving Powe
Microscope, Line Specha
of Hydrogen –

* Each line constituted
of different frequency
components

* fine structure of
spectral lines

⇒ Each energy state
given by 'n' are constituted
of 'sub-shells' of nearly
different energies.

* could not be explained
by Bohr's At. Model

Sommerfeld Model

* e^- more in circular orbit — Bohr Model
* NoT circular orbit but in elliptical orbits
* Nucleus at one of the focus
* Hence, e^- has two degrees of freedom (r, ϕ); r – radial, ϕ – azimuthal

$$\left.\begin{aligned} p_r &= n_r \frac{h}{2\pi} \\ p_\phi &= n_\phi \frac{h}{2\pi} \end{aligned}\right\} \begin{aligned} n_r + n_\phi &= n \\ \frac{b}{a} &= \frac{n_\phi}{n} \end{aligned}$$